



# MISSOURI DEPARTMENT OF NATURAL RESOURCES

## Giardia and Drinking Water

Fact Sheet

1/2002

Public Drinking Water Program

### What is giardia?

*Giardia lamblia* is a single-celled disease-causing microbe. *Giardia* is an intestinal parasite of mammals, including humans, and can cause the disease giardiasis. In Missouri, it is a common cause of diarrheal illness with over 800 cases being reported each year. In the environment, this protozoan exists as a hard-shelled, egg-like structure called a cyst. The cyst is the infectious stage of giardia. *Giardia* are extremely small and only visible under a microscope.

### How do humans become infected with giardia?

*Giardia* is transmitted by the fecal-oral route. A person may become infected by ingesting cysts. *Giardia* may be spread by a very small amount of feces found in a number of places, including unwashed hands, contaminated surfaces inside and outside the home, contaminated drinking water, food, recreational water, and sexual behavior involving contact with feces. Contact with animal feces, including domestic animals, can also be a source. *Giardia* is more common among children, in areas with poor sanitation, institutions, and day care centers. Family members of young children with giardia often become infected. People who ingest water while swimming or who drink untreated water from streams or lakes while hiking or camping are also at risk.

### What are the symptoms of giardia?

Most people with giardiasis will not have any symptoms. Others may have mild to severe diarrhea, cramps, bloating, and gas. Usually, these symptoms develop within three to 25 days after exposure. Depending on treatment, the symptoms may last for a period of 10 to 15 days. For some, diarrhea may last several weeks or even months.

### How does giardia get into surface waters?

Cysts are excreted in the feces of infected animals and humans. The cysts get into surface waters through sewage or rainwater runoff or directly from infected animals, such as beavers and muskrats. As a result, cysts can be present in surface waters such as lakes and rivers that are used as drinking water sources. Therefore, stringent water treatment processes are required of all surface water supplies.

### Can giardia get into public drinking water supplies?

That depends on the source. The likelihood of giardia getting into well water is extremely remote. Well water is normally protected from surface influences by the natural filtering processes of the earth; proper well construction adds further protection.



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Because microbes, including giardia, are common in surface waters, the Missouri Department of Natural Resources requires public water systems to treat surface water to remove and inactivate microbes. Public water supplies which use surface water as their source must be in compliance with the Surface Water Treatment Rule (SWTR). This rule requires that all water supplies in Missouri which use surface water as their source filter and disinfect their water. The filtration and disinfection must be effective enough to remove or inactivate 99.9 percent of giardia cysts that may be present in the source waters. The stringent water treatment processes required of surface water plants include coagulation, flocculation, sedimentation, filtration, and disinfection. These treatment processes cause the particles in the water to be attracted to each other to make bigger particles, which then settle out. The particles that do not settle out are then filtered out. Once the water passes through the filters, it is disinfected and sent out into the distribution system.

### **What can be done to prevent giardia?**

Good sanitary practices are the most effective way to prevent giardia. Wash hands carefully after using the bathroom or changing diapers and before preparing or eating food. Make sure children's hands are washed often. When hiking or camping, avoid drinking untreated surface water from lakes and rivers.

### **Is treatment available?**

People with symptoms who test positive for giardia should get medical treatment. Effective drugs are available to treat this illness.

### **Where can I get more information?**

For more information call or write  
Missouri Department of Natural Resources  
Public Drinking Water Program  
P.O. Box 176, Jefferson City, MO 65102-0176  
1-800-361-4827 or (573) 751-5331 office  
(573) 751-3110 fax  
[www.dnr.state.mo.us/deq/pdwp](http://www.dnr.state.mo.us/deq/pdwp)

Or contact the Missouri Department of Health at (800) 392-0272.